GP-302653

ENGINE WITH DUAL OILING AND HYDRAULIC VALVES

ABSTRACT OF THE DISCLOSURE

An internal combustion engine has a plurality of cylinders containing pistons connected with a crankshaft for transmitting power. The cylinders have closed ends, intake and exhaust ports communicating with the cylinders through the closed ends, valves operable to open and close the ports to air and exhaust flow to and from the cylinders, and a lower end pressure oil lubrication system operative to lubricate at least the cylinders, pistons and crankshaft of the engine. The engine includes hydraulic actuators operable to actuate the valves and forming part of a separate upper end hydraulic oil actuation system operative to selectively supply high pressure hydraulic oil to the hydraulic actuators to actuate the valves in a predetermined manner. Optionally, the hydraulic system may have an oil reservoir within the engine block, such as in the valley between the cylinder banks of a V type engine.

10. engine
12. block
14. banks
16. cylinders
18. crankcase
20. oil pan
22. lower sump
24. crankshaft
26. crankpins
28. connecting rods
30. pistons
32. cylinder heads
34. intake ports
36. exhaust ports
38. intake manifold
40. exhaust manifolds
42. intake valves
44. exhaust valves
46. valve heads
47. valve seats
48. valve stems
50. valve guides
52. valve springs
54. lower end pressure oil lubrication system
56. upper end pressure oil hydraulic system
58.
60. low pressure oil pump
62. pickup tube
64. oil filter
66. oil cooler
68. main oil galleries
70. crankshaft bearings
72. oil squirters
74. oil reservoir
76. valley
78. transverse wall
80. oil sump
82. high pressure oil pump
84. pickup tube
86. oil filter
88. oil cooler
90. hydraulic valve actuators
92. timing chain
94. hydraulic lines
96.
98.
100.
102.
104.
106.
108.
110.